



STATE OF MAINE  
DEPARTMENT OF ADMINISTRATIVE & FINANCIAL SERVICES  
OFFICE OF INFORMATION TECHNOLOGY  
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February 6, 2016

Mr. James Beyer & Ms. Jessica Damon  
Maine Department of Environmental Protection  
106 Hogan Road, Suite 6  
Bangor, Maine 04401

Subject: **Site Location of Development and Natural Resources Protection Act Permit applications, Number Nine Wind Farm LLC DEP #L-26502-2F-G-N, #L-26502-24- H-N, #L-26502-IW-I-N, #L-26502-L6-J-N, #L-26502-VP-K-N, #L-26502-TH-L-N**

Dear Mr. Beyer & Ms. Damon,

Further to Number Nine Wind Farm LLC's "Microwave Study Number Nine Wind Farm" submission dated November 3, 2015 prepared by Comsearch on behalf of Number Nine Windfarm LLC and submitted to the Department of Environmental Protection on December 17, 2015, the following presents a State of Maine, Department of Administrative and Financial Services, Office of Information Technology (OIT) request for further information.

**Request for Analysis:**

OIT requests that Number Nine Wind Farm LLC provide a cross sectional analysis for the subject turbines and beam path for "K" values of 4/3, 1.0 and 2/3; respectively, for the "Two turbines ... found to intersect the two dimensional Fresnel Zones of one microwave path".

**Background:**

The submitted "Microwave Study Number Nine Wind Farm" presents

- in Section 4. a "Cross Sectional Analysis" for two turbines found to have "potential obstruction cases".
- in Section 5. Comsearch concludes: "Two turbines were found to intersect the two dimensional Fresnel Zones of one microwave path. Based on the cross sectional analysis, it was determined that the blades pass below the beam path and neither are expected to cause signal obstruction." From Table 4, the respective "Cross Sectional Clearance" values are stated as 35.58 and 6.04 meters respectively.

Microwave beams are subject to atmospheric refraction (bending of the beam). The amount of refraction varies over time due to changes in such variables as temperature, pressure and relative humidity.

In microwave path design the degree of bending is defined by an equivalent earth radius factor, commonly referred to by the variable name "K".

A "K" value of 1.0 represents the earth's actual radius. Values greater or less than 1.0 represent a proportional increase or decrease in the amount of refraction (beam bending).

Path design for high performance microwave systems typically require first Fresnel Zone clearance for K values of 4/3, 1.0 and 2/3.

Please advise if further detail to support this request is required.

Respectfully;

A handwritten signature in black ink, appearing to read "Thomas P. Driscoll". The signature is fluid and cursive, with a long horizontal stroke at the beginning.

Thomas P. Driscoll  
Maine Office of Information Technology

CC: Greg McNeal, CTO  
John E. Richards, Director of Radio Services  
Stanley Fage, Technical Lead